

III. SURFACE WATER ASSESSMENT

G. WETLANDS

1. Extent of Wetlands Resources

According to the Rhode Island Geographic Information System (RIGIS) data approximately 18.4% of the state area (127,721 acres) is wetland and deepwater habitat (Cowardin et al. 1979). There are approximately 92,536 acres of palustrine wetland, 17,518 acres of lacustrine wetland and deepwater habitat, 1839 acres classified as riverine, and 15,827 acres of marine/estuarine wetland. Palustrine wetlands represent 13.3% of the State's surface area; lacustrine areas represent 2.5%; riverine areas represent 0.3% and marine/estuarine areas represent 2.3% of Rhode Island's area. These figures do not include the areas of Narragansett Bay and the Pawcatuck River Estuary. Wetland classes and their approximate acreages are listed in Table 3G-1. The most abundant wetland type in Rhode Island is palustrine forested wetland, commonly known as wooded swamp, dominated by red maple (*Acer rubrum*) or Atlantic white cedar (*Chamaecyparis thyoides*) trees.

Table 3G-1. Wetlands and Deepwater Habitats of Rhode Island (RIGIS 1988)

WETLAND TYPE	AREA (acres)
Riverine Nontidal Open Water	1832
Lacustrine Open Water	17,518
Palustrine Open Water	4481
Palustrine Emergent Wetland: Marsh/Wet Meadow	4341
Palustrine Emergent Wetland: Emergent Fen or Bog.....	229
Palustrine Scrub-Shrub Wetland: Shrub Swamp	9606
Palustrine Scrub-Shrub Wetland: Shrub Fen or Bog	2060
Palustrine Forested Wetland: Deciduous	60,694
Palustrine Forested Wetland: Coniferous	10,900
Palustrine Forested Wetland: Dead	225
Riverine Tidal Open Water	7.4
Estuarine Open Water	8175
Estuarine Emergent Wetland	4014
Estuarine Scrub-Shrub Wetland	93
Marine/Estuarine Rocky Shore.....	671
Marine/Estuarine Unconsolidated Shore	2874
TOTAL AREA.....	127,721 acres

Source: RIGIS. Data based on photo-interpretation of 1988 1:24,000 scale black and white aerial photographs, minimum map unit ¼ acre.

The above information represents approximate present wetland acreage. Information regarding historical acreage is not readily available.

The DEM Narragansett Bay Estuary Program (NBEP) organized and implemented a collaborative mapping project to determine the abundance and distribution of coastal habitats in Narragansett Bay. True color aerial photographs taken in July 1996 were used to develop Geographic Information System (GIS) maps of eelgrass beds (*Zostera marina*), salt marshes, brackish marshes, beaches, rocky shores, tidal flats, and oyster reefs. The project area is defined as the tidal waters and nearshore areas north of a line extending from Pt. Judith, Narragansett to Sakonnet Point, Little Compton, R.I. A summary of the coastal habitat areas is presented in Table 3G-2. The digital habitat coverages are available through RIGIS. Data from this project have been applied to new studies to identify and prioritize habitat restoration sites and analyze coastal wetland trends in the Bay. Funding was provided by the DEM Aqua Fund, the NBEP, the U.S. EPA, and Save the Bay.

Table 3G-2. Summary of Coastal Habitats in Narragansett Bay (RI and MA)

HABITAT TYPE	AREA (acres)
Open Water	124,259.4
High Salt Marsh	2,708.7
Beaches	1,450.5
Rocky Shores	573.3
Tidal Flats	568.6
Low Salt Marsh	443.2
Brackish Marsh	427.6
High Scrub-Shrub Marsh	159.3
Eelgrass Beds	99.5
Pannes & Pools	46.3
Dunes	43.0
Artificial Jetties & Breakwaters	23.1
Oyster Reefs	9.0
Stream Beds	<u>3.5</u>

TOTAL AREA..... 130,815.0 acres

Source: *Report on the Analysis of True Color Aerial Photographs to Map Submerged Aquatic Vegetation and Coastal Resource Areas in Narragansett Bay Tidal Waters and Nearshore Areas, Rhode Island and Massachusetts*. Prepared by I. Huber, Natural Resources Assessment Group, University of Massachusetts, November 1999. Narragansett Bay Estuary Program Report No. 99-117.

The DEM NBEP is currently coordinating a similar cooperative mapping project in the South Shore, Little Compton and Block Island. True color aerial photographs taken in June 1999 are being used for the delineations. The project area encompasses the South Shore coastal ponds and watershed, the Pawcatuck River and Little Narragansett Bay, Little Compton coastal ponds and watershed, and Block Island tidal and near shore areas. Project partners include the U.S. Fish and Wildlife Service, University of Massachusetts, and the University of Rhode Island Environmental Data Center. The results from this project will be available to environmental organizations and local planning groups, and will be a central component of the statewide Habitat Restoration Plan. Funding is being provided by the R.I. Oil Spill Prevention, Administration, and Response Fund and EPA, Region 1.

- a. Freshwater Wetlands – State Regulations

Rhode Island was among the first states to pass legislation to protect freshwater wetlands. The Rhode Island Freshwater Wetlands Act (R.I.G.L. Sections 2-1-18 et seq.) was enacted in July 1971. The Act describes the public policy of the State of Rhode Island and Providence Plantations to preserve, protect, and restore the purity and integrity of the State's freshwater wetlands in order to protect the health, welfare and general well being of the public. The Act and the *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act* describe the wetland functions and values that are regulated and protected: floodwater storage, groundwater recharge, wildlife habitat, recreation, and water quality improvement.

The Department of Environmental Management (DEM) and the Coastal Resources Management Council (CRMC) are both charged with regulation of freshwater wetlands, DEM through the Act and CRMC through R.I.G.L. Chap. 46-23-6. The DEM Office of Water Resources (OWR) Wetland Permitting Program and the Office of Compliance and Inspection Wetland Enforcement Program currently administer and enforce the Act and the *Rules and Regulations*. In general, approval is required for any activity that may alter the character of any freshwater wetland. Applicants are required to avoid and minimize all impacts to wetlands and no random, unnecessary or undesirable alteration of wetlands is permitted.

Freshwater wetlands in Rhode Island include: swamps, marshes, ponds, bogs, the area of land within 50 feet of these wetlands (perimeter wetland), 100-year floodplain; all rivers, streams, and intermittent streams; 100 foot and 200 foot riverbanks depending upon whether the associated flowing body of water is less than or greater than 10 feet in width, areas subject to flooding and storm flowage; any forested, shrub or emergent wetland; and special aquatic sites (vernal pools). In general, approval is required for any project or activity which would excavate, drain, fill, deposit material or effluent, divert flow into or out of, dike, dam, divert, change, add to or take from, or otherwise alter the character of any freshwater wetland. Exempt activities as specified by law or rule and carried out in a manner which is protective of wetland functions and values do not need a specific written approval. Certain projects including new farm roads, new farm ponds and drainage structures for agricultural purposes carried out by farmers are handled by DEM's Division of Agriculture. The Division of Agriculture coordinates the review and evaluation of such projects to ensure that such projects represent insignificant alterations to freshwater wetlands.

In January 2000, the DEM Director formed a Wetland Task Force which began a Department-wide effort to streamline the regulatory programs. The Wetland Task Force met throughout calendar year 2000 and concluded its work with the completion of the Final Report on March 21, 2001.

The Task Force investigated statutory, regulatory, policy, and administrative changes in order to streamline program operations, increase customer satisfaction and meet the mandates of the law. Task Force members represented a wide range of interests including federal, state and local government, the Governor's Office, the Legislature, builders, realtors, consultants, nonprofit organizations, and scientists. Based on issues raised by the members, 10 working groups were formed who subsequently brought recommendations back to the full Task Force. The Department analyzed the recommendations and committed to moving forward with many program changes as described in the Final Report's executive summary.

Implementation of the Wetland Task Force recommendations was a high priority for DEM in 2001. With EPA Region 1 support and through the New England Interstate Water Pollution Control Commission (NEIWPCC), DEM obtained contractual assistance to implement both outreach and regulatory recommendations in a multi-year plan.

Rule amendments became effective Department-wide on January 1, 2001 in response to the uniform appeal statute (R.I.G.L. 42-17.7-9). The wetland revisions advise the regulated community that newly enacted times must be followed for appeals of permits, applications, and enforcement actions.

Other *Rule* amendments (dated August 2001) went into effect on September 19, 2001. Included are definitions and reduced fees for wildlife habitat and water quality improvement projects, as well as reduced fees for land reuse and redevelopment projects. In addition, private property owners are now eligible to apply for permits for emergency alterations. The amendments allow a permit to be modified if the proposed project change involves increased disturbance into already disturbed wetland. Conversely, a permit modification will not be approved if there is a proposed increase in disturbance into areas that were not previously evaluated by DEM as part of the initial application.

More notably, the amendments clarify whether DEM or the Coastal Resources Management Council (CRMC) will review freshwater wetland projects that are on, or that straddle, the jurisdictional boundary that was implemented in 1999. In conjunction with the *Rule* amendments, DEM and CRMC revised the freshwater wetland boundary to further reduce jurisdictional overlap at 3 tidal rivers so that the freshwater boundary coincides with the coastal program boundary. These agencies also finalized and executed a Memorandum of Agreement detailing interagency coordination and operations.

DEM and CRMC renegotiated the Programmatic General Permit (PGP) with the Army Corps of Engineers, New England District and with other federal agencies in 2001. The PGP facilitates a coordinated federal and state review of applications involving deposition of dredged or fill material in wetlands. The PGP enables applicants to submit a single application to the State agency to obtain both State and federal wetland permits. The new 5-year agreement becomes effective in February of 2002. No substantive changes were made to the freshwater aspect of the PGP.

During calendar years 1999 and 2000, the DEM Wetlands Permitting Program issued 318 and 287 new permits. In these years over 95% of the permits were for projects involving insignificant impacts to regulated wetlands; with a total of 21 applications requiring formal permits for significant alterations. There was 1 emergency permit issued during this 2-year period. The greatest number of new permits was issued for residential development, including new residential lots, modifications to already developed lots, residential subdivisions, and apartments or condominiums. Permits for residential development represented 54% of the permits issued in 1999 and 53% of the permits issued in 2000. There were 119 and 100 permits granted for new residential lots alone in these years. This represents 37% and 35% of the total permits granted in each of those years.

During calendar year 2000 the Wetland Compliance Program received 551 wetland-related complaints and issued 99 actions, e.g., warning letters, Notices of Intent to Enforce, and Notices of Violation. The Compliance Program determined 213 complaints to be unfounded and determined that 132 additional complaints needed no further action. A total of 1007 inspections were completed in 2000. A large majority of enforcement actions are resolved without the need for adjudication or court action. Besides seeking informal resolution of all enforcement actions, the DEM uses alternative dispute resolution to resolve violations. When necessary, cases are referred to the Attorney General's Office for prosecution (7 cases in 2000). The Office of Compliance also negotiated 2 alternative dispute resolution cases, and filed 2 cases in Superior Court.

b. Coastal Wetlands – State Regulations

Coastal wetlands in Rhode Island are regulated by the CRMC through the Coastal Resources Management Program (CRMP) and Special Area Management Plans (SAMP). The Rhode Island General Assembly established the Council in 1971 for the purpose of managing the coastal resources of the State, including the barrier beaches of the southern coast, Rhode Island and Block Island Sounds, and Narragansett Bay. Activities proposed in Rhode Island's tidal waters, on shorelines abutting tidal waters and coastal ponds, as well as activities within 200-feet of coastal features (beaches, dunes, wetlands, cliffs, bluffs, embankments, rocky shores, and manmade shorelines) require a CRMC approval (Assent). A variety of industrial activities proposed inland of the coastal zone that may impact coastal resources may also require a CRMC Assent. Projects that are proposed in the poorly flushed estuaries of the Narrow River and the south shore coastal ponds and that meet given size thresholds trigger a SAMP review by CRMC.

There are approximately 3700 acres of salt marsh in Rhode Island, approximately 10% of which are considered fringe marshes less than 5 yards wide (CRMP). Approximately 90% of Rhode Island's salt marshes abut tidal waters designated Type 1 (Conservation) and Type 2 (Low Intensity Uses) by the CRMP. CRMP policies and regulations governing Type 1 areas prohibit alteration of coastal wetlands, while policies for Type 2 marshes allow only minimal alterations in association with dock construction and other low-intensity uses. CRMC staff report that the policies are generally effective in avoiding further loss of coastal wetlands. Specific figures of wetland loss are not available due to data system constraints.

c. US Army Corps of Engineers (ACOE) - Programmatic General Permit (PGP Process)

As a result of cooperative efforts between the DEM OWR, CRMC and the Army Corps of Engineers (ACOE), a programmatic general permit (PGP) process was implemented in Rhode Island in February 1997. This process replaced the Nationwide Permits Process previously implemented by ACOE in accordance with Section 404 of the Federal Clean Water Act. Under the PGP, projects are categorized as I or II. Category I projects represent minor impacts to State waters and are non-reporting to the ACOE. Category II projects represent more than minor impacts to State waters and must be reviewed at a monthly screening meeting where appropriate State and Federal agencies review the project. If the project is determined to meet all appropriate state and federal regulations, agencies can determine compliance at the meetings. For both category I and II projects, the appropriate State agency, either the DEM, Freshwater Wetlands Program, or the CRMC, can issue the ACOE's PGP, along with the appropriate state permit. For projects that fall under the ACOE Individual Permit process, the ACOE maintains its established permitting process. To date, the process has successfully streamlined the multi-agency permitting process and facilitating coordination.

2. Development and Enforcement of Wetland Water Quality Standards

a. Wetlands Water Quality Standards

The term "waters of the state" include both freshwater and coastal wetlands. Accordingly the Surface Water Quality Regulations including the surface water classifications, standards and criteria. (Table 3G-3) pertain to all wetlands.

TABLE 3G-3. Development of State Wetland Water Quality Standards

	In Place	Under Development	Proposed
Use Classification	X		
Narrative Biocriteria	X		
Numeric Biocriteria			
Antidegradation	X		
Implementation Method	Section 401 State Wetland Permit		

Biomonitoring is a method by which scientists study the natural systems to determine their ecological health. Currently, Rhode Island uses biomonitoring to assess the health of flowing rivers and streams, however, there are no established protocol for implementing these measures in wetland systems. The northeastern states have been selected by EPA headquarters to test and implement wetland bioassessment projects through the New England Bioassessment Wetland Working Group (NEBAWWG). Rhode Island participates in this working group.

b. Section 401 Water Quality Certification Program

OWR enforces the water quality standards through the Water Quality Certification program as provided for in the Rhode Island Water Quality Regulations for Water Pollution Control. Certain proposed activities require an applicant to obtain

approval from the Water Quality Certification Program. Such approval certifies that the proposed project does not violate the State Water Quality Regulations. Rule 13 of the State Water Quality Regulations defines these activities to include federal projects, as defined in Section 401 of the Clean Water Act, and certain projects located wholly or partly in the coastal zone. These projects include dredging and possibly dredged material disposal, filling of Waters of the State, site disturbances which have the potential to contribute increased pollutants to a Water of the State, (specifically residential development of six or more units, any commercial, industrial, state, or municipal land development, or any project which disturbs five or more acres), marina construction or expansion, flow alterations, Harbor Management Plans, and point source discharges. In addition to Rule 13 requirements, a Water Quality compliance review or Water Quality Certification is required for certain proposed activities associated with inland waters that fall under the jurisdiction of the Freshwater Wetlands Program and/or the ACOE PGP process. In 1999 the OWR issued 116 WQC determinations in association with the above described review process. In 2000, the OWR has issued 110 WQC determinations.

The WQC evaluation is performed using the Antidegradation Policy provisions of the Water Quality Regulations as guidance to determine compliance with these regulations. The Antidegradation Policy is based on the Federal Antidegradation Policy requirements (40 CFR, 131.12) and adopted under the authority of Chapter 46-12, 42-17.1, and 42-35 of the General Laws of Rhode Island, as amended. The provisions of the state Antidegradation Policy have as their objective the maintenance and protection of various levels of water quality and uses. This policy consists of three tiers of water quality protection; tiers 1, 2, and 3. Antidegradation is one of the minimum elements required in state water quality standards and applies to any new or increased activity that could lower water quality. Antidegradation requires that all existing uses are to be maintained in State waters. Tier 3 criteria reserved for Special Resource Protection Waters (SRPWs). Tier 3 prohibits any permanent lowering of water quality in high quality waters designated as Outstanding Natural Resource Waters. This policy has been referenced as grounds to denial and approval of proposed alterations to the State's freshwater or coastal wetlands.

3. Integrity of Wetlands

a. Freshwater Wetlands Loss and Restoration

Historic freshwater wetland loss in Rhode Island, as reported in U.S. Fish and Wildlife Service publication *Wetlands Loss in the United States 1780's to 1980's* (Dahl 1990) was estimated to be 37%, although the methodology used to generate this figure is flawed (F. Golet, University of Rhode Island Department of Natural Resources Science; pers. comm., 1999). In the Providence metropolitan area, major historic wetland losses can be attributed to urbanization. In the more rural parts of the State, transportation projects and residential development have been the primary causes of wetland loss both historically and in more recent times. Parkhurst (1977) found that highway construction and residential development caused the greatest amount of wetland loss in South Kingstown between the years 1939 and 1972. Wetland loss due to agriculture in Rhode Island has been relatively minor compared to other parts of the country.

In addition to wetland loss there has historically been conversion of wetlands

from one class to another, with the construction of dams being the primary mechanism. The construction of dams has resulted in the conversion of palustrine vegetated wetlands and riverine wetlands to open water and deepwater habitats. Over time, areas of palustrine vegetated wetland have developed at the edges of the impoundments.

Computerized tracking of physical losses and gains went on-line in January 1998. Data collected for calendar years 1999 and 2000 indicate that permitted freshwater wetland losses were limited to 0.5 acres net loss in 1999 and 2.1 acres net loss in 2000. In the year 2001, the Office of Water Resources, in coordination with the Office of Compliance and Inspection increased the inspections of properties with wetland permits to make sure property owners were in compliance. Permitting staff conducted 156 compliance inspections and found 27 cases of non-conformance, which means that approximately 17% of inspected sites are in permit violation of some sort.

Based upon enforcement activities, the Wetlands Compliance Program determined that during 2000, there was 17.1 acres of unauthorized biological wetland alteration; and 10.8 acres of perimeter wetland, riverbank wetland, and floodplain were illegally altered during the same period. It is DEM policy to pursue restoration wherever feasible. As a result of enforcement activities, a total of 4.2 acres of wetland and 8.2 acres of buffer areas were reported restored during 2000. Note that these figures reflect restorations completed in 2000 that may have been identified in prior years.

With the assistance of an EPA 104(b)3 wetlands grant DEM and the University of Rhode Island are collaborating on a two phase project to develop and apply methods for the identification and prioritization of proactive freshwater wetlands restoration opportunities. In Phase 1, methods were developed and applied in 2 test areas in urban and rural parts of the state. In Phase 2, beginning in July 2000, the methods are being applied throughout the Woonasquatucket River watershed. One hundred forty six (146) potentially destroyed wetlands and 249 areas where upland buffer vegetation have been identified in the watershed. A select number of sites will be carried through a feasibility phase. The results will be a wetland restoration plan for the watershed. Both of these projects will contribute to the development of the freshwater wetland component of a statewide Habitat Restoration Plan.

b. Coastal Wetlands Loss and Restoration

It is generally accepted that the historical loss of coastal wetlands in Rhode Island has been substantial. As a result, in recent years, there has been growing interest in facilitating coastal habitat restoration. The most significant project to date has been a multi-year and multi-agency, 1.9 million dollar salt marsh restoration at the DEM-owned Galilee Bird Sanctuary in Narragansett that resulted in the restoration of 84 acres of salt marsh and 14 acres of new open tidal channels. More recently, numerous partners have teamed to complete coastal wetland restoration projects at Common Fence Point, Portsmouth; Sachusett Point National Wildlife Refuge, Middletown; and Mosquito Beach, New Shoreham.

The DEM NBEP is coordinating a cooperative project funded by DEM's Aqua Fund Program to identify coastal wetland sites for potential restoration in the vicinity of Narragansett Bay. The results of the recently completed Coastal Habitat Inventory for Narragansett Bay have provided the foundation for this work. Using aerial photo

interpretation and field work, potential coastal wetland restoration sites are being identified and mapped. The GIS maps and database will facilitate the efforts of decision-makers to locate and prioritize wetlands that are practical and feasible to restore. Project partners include the U.S. Fish and Wildlife Service, University of Massachusetts, University of Rhode Island Environmental Data Center, and Save the Bay. Another project funded by the U.S. EPA will provide an historical assessment of changes or trends in coastal wetlands and their buffers between the 1950's and 1990's, and back to the 1930's in selected sites. Digital information from these projects will be available through RIGIS.

In July 2000, the DEM NBEP embarked on a two-year partnership project with CRM, Save the Bay, and the NOAA Coastal Services Center in Charleston, S.C to develop the Coastal Habitat Restoration Plan and Information System. This plan will be a Web-based tool to promote and facilitate restoration of Rhode Island's coastal habitats. The System will combine information on coastal habitats and restoration sites with a decision-making model, allowing users to select and prioritize coastal habitat restoration projects. The intended audience includes state and local agencies, community groups, municipalities, academic institutions, policy-makers and the public. The system will be used to develop a statewide coastal habitat restoration plan for Rhode Island and, it is expected, will enhance the state's capacity for undertaking restoration at all scales. Many of the federal, state and non-governmental members of the Habitat Restoration Team, are actively participating in the project, scheduled for completion in June, 2002. It is anticipated that, in addition to improving restoration planning and capacity in Rhode Island, the system will be transferable to other geographic areas with an interest in promoting stakeholder involvement in regional restoration planning.

4. Additional Wetland Protection Activities

a. Protection of Wetlands Via Acquisition

An additional means of protecting wetlands is through acquisition. The DEM Office of Planning and Development (P&D) includes wetland protection within its coordination of state land acquisition programs and open space grants. Wetlands permanently protected through acquisition by the state administered programs and associated partners total over 529 acres for 2001. The programs use state bond funds supplemented by other sources such as U.S. Fish & Wildlife funded, North American Waterfowl Conservation Act grants. Data on wetland acquisitions by The Nature Conservancy (TNC), the Audubon Society of Rhode Island and the forty local land trusts in Rhode Island are not readily available.

Wetlands often represent only a portion of an overall open space acquisition and are not necessarily targeted. Two special projects were funded that specifically involve wetland assessment for acquisition purposes. TNC with DEM and local stakeholders, through an EPA 104(b) 3 wetlands grant, completed a wetland conservation plan for the Towns of Tiverton and Little Compton. In addition the Rhode Island Association of Wetland Scientists has teamed with 4 towns to assess wetlands on specific parcels of property that are under consideration for protection. Finally, the Wetland Task Force Watershed Working Group recommended that wetland acquisition planning be integrated through the watershed approach. (Final Report, March 2001)

b. Data Management Improvements

Utilizing 104(b)3 funds, OWR is continuing to undertake projects to improve data system capabilities relative to wetland programs. Most recently, through an interactive map server DEM's geographic information coordinator has linked wetlands applications with the statewide digital Ortho photographs and with other natural resources overlays. A separate DEM-wide permit streamlining effort is underway and an Oracle data management system may be developed which would link wetlands data with other programs.

At the request of DEM, and with EPA support, University of Rhode Island completed a survey of wetland map users. Of 500 regulators, planners, municipal officials, builders, and private conservation organizations one hundred and forty responses were received. The results indicated that a wide range of professionals use wetlands map data regularly and that users prefer up-to-date, large-scale maps, with a high degree of positional accuracy. The majority of users think that improved maps are needed, while understanding that even the best map will not replace field information. Also as part of this project, 13 regional wetland and mapping experts were interviewed to determine the best methods to improve Rhode Island's wetland maps should funding be available. In a report to DEM the project principals recommend that the State undertake a project to improve wetland maps and that 1:12,000 scale, color-infrared photography be used as the source imagery (Miller, Golet, and August, 2001).

c. Watershed Based Protection Efforts

In Rhode Island, local authority for regulating wetlands is limited; however, it is recognized that municipalities and local stakeholders play a critical role in resource protection. To strengthen local capabilities, the URI Cooperative Extension Program undertook a 2-year project, piloted in the Wood-Pawcatuck Watershed, aimed at providing improved tools for local wetland protection. Working collaboratively with TNC, the project involved collection of field data, analysis and classification of the water quality functions of wetlands, and promotion of local actions to protect high value wetlands. This work was funded by EPA 104(b)3 wetland grants. In addition EPA 104(b)3 wetlands grants are being used by the DEM OWR, in partnership with the USGS and others, for a multiyear habitat assessment study in the Queens-Usquepaugh watershed. The goal of this project is to provide technical information as a foundation for a voluntary water management plan for the watershed.

d. Innovative/Effective Approach to Protection - Wetland Habitat Restoration Planning

As previously described, the OWR has utilized EPA 104(b)3 wetland funds to build the technical foundation for both freshwater and coastal wetland restoration planning.

e. Vernal Pool Workgroup

Other EPA 104(b)3 wetland funds have been used for vernal pool protection projects. A wetland grant was awarded to the URI Department of Natural Resources Science to develop a web-based vernal pool protection manual for use by scientists and

educators at <http://www.uri.edu/cels/nrsl/paton/>. This website includes information on the characteristics of vernal pools, how to identify them, and indicator species. A large portion of the site is dedicated to life history accounts and movement patterns of pond-breeding amphibians, which is information not readily available from other sources. In addition, information is provided on the current efforts to protect vernal pool habitat, including state definitions and regulations. URI will also work with the vernal pool digital coverage of the Pawcatuck watershed and create a map of confirmed versus unconfirmed vernal pools. This map will be utilized for further watershed planning projects.

In 2001, the URI Department of Natural Resources Science and DEM also teamed up for the development of a database and GIS coverage of amphibians, based on nearly 20 years of DEM Fish and Wildlife service field records. This database will initially be used by DEM and then expanded to include other amphibian and vernal pool data.

f. Protection of Freshwater Wetlands Via Permitting

As a result of the reorganization of DEM in 1996, the Wetlands Permitting Program, Water Quality Certificate program and other water-related permitting programs are now housed together in DEM's OWR. This has facilitated closer coordination between the various programs and opportunities remain for further integration. Permit streamlining has received a great deal of emphasis. With the creation of a wetlands policy position in the OWR in 1999 and the addition of several new biologists to the Permitting Program a variety of actions to increase wetland outreach and to streamline operations while maintaining effective environmental protection have been completed.

5. Agency Coordination/Wetlands Protection

Coordination on freshwater wetland protection occurs routinely with the water permitting programs within the OWR, as well as with the DEM Office of Compliance and Inspection and the CRMC. In addition, the wetlands policy and permitting staffs coordinate routinely with other federal, state, and local wetland protection partners, including the EPA Region 1, the Rhode Island Association of Wetland Scientists and the University of Rhode Island. The following DEM Offices also routinely coordinate with the Wetlands Program: a) the Division of Fish and Wildlife routinely provides habitat-related comments on large projects development projects that include wetland alterations; b) the Division of Agriculture has regulatory authority over farming activities in freshwater wetlands and hence, routinely coordinates project review with the Wetland Permit Program; c) the Division of Forest Environment coordinates when needed on matters regarding cutting or forest management plans which could effect freshwater wetlands, and d) the Office of Waste Management have established procedures to coordinate on remedial action plans that may involve disturbances to freshwater wetlands.

Outreach has been an especially important part of the wetlands program during the past 2 years. In September 2001, DEM partnered with the Rhode Island Association of Wetland Scientists (RIAWS), the Forest & Wood Products Institute, and the Southern New England Logger Ed program for a Saturday workshop on *Wetlands Regulations for Loggers*. DEM OCI also assisted the Rhode Island Forest Conservator's Organization, Inc. with revisions to the forestry *Best Management Practices for Rhode Island* manual.

In November 2001, DEM hosted a *Wetlands Permit Training Workshop* for consultants. RIAWS, along with the City of Cranston and the Department of Administration all helped in planning the event.

As a counterpart to the November consultants' workshop, DEM hosted another Wetlands Permit Training workshop for Municipal Officials in January 2002. This workshop had a similar focus to the November workshop, but also included a Town/City & DEM Coordination panel discussion. Nearly 50 participants from 21 different cities and towns attended this workshop to learn about the wetlands permitting process and how to submit quality applications.

DEM staff with the assistance of the Wetland Task Force outreach-working group and RIAWS prepared many new fact sheets and engineering guidance documents in preparation for the 2001 workshops. All these materials are presently being added to the DEM wetland permitting website at:

<http://www.state.ri.us/dem/programs/benviron/water/permits/fresh/index.htm>.

DEM unveiled a new wetland web page on Rhode Island freshwater wetlands in 2001, at: <http://www.state.ri.us/dem/programs/benviron/water/wetlands/index.htm>. This page is designed to help the public learn about wetlands in a non-regulatory context. Finally, DEM has partnered with the Roger Williams Park Zoo on a multi-year project to develop a wetland education center at the zoo.